

CURRICULUM VITAE

PERSONAL INFORMATION

Name **PAVEL A. BELOV**

Work address **ITMO UNIVERSITY
KRONVERKSKY PR. 49, 197101
ST. PETERSBURG, RUSSIA**

Work phone/Mobile phone **+7 963 3222320**

E-mail belov@metalab.ifmo.ru

Date of birth **18 December 1977**

EDUCATION

- Dates (from – to) February 2004 – November 2010
- Name of organization St. Petersburg State University of Information Technologies, Mechanics and Optics, Sablinskaya st. 14, 197101, St. Petersburg, Russia; www.ifmo.ru
- Principal subjects Optics and radiophysics
- Title of qualification **Doctor of Science**
- Title of thesis Transmission of electromagnetic field distributions with subwavelength resolution by means of extremely anisotropic metamaterials

- Dates (from – to) May 2001 – November 2006
- Name of organization Radio Laboratory, Helsinki University of Technology, PO. Box 3000, FIN-02015 TKK, Espoo, Finland ; www.hut.fi
- Principal subjects Radioengineering and electromagnetics
- Title of qualification **Doctor of Science in Technology, with distinction (second PhD)**
- Title of thesis Analytical modeling of metamaterials and new principle of sub-wavelength imaging <http://lib.tkk.fi/Diss/2006/isbn9512283786/>

- Dates (from – to) May 2001 – September 2004
- Name of organization Radio Laboratory, Helsinki University of Technology, PO. Box 3000, FIN-02015 TKK, Espoo, Finland ; www.hut.fi
- Principal subjects Radioengineering and electromagnetics
- Title of qualification awarded **Licentiate in Technology, with distinction**
- Title of thesis Analytical studies of complex microwave stop band structures

- Dates (from – to) July 2000 – May 2003
- Name of organization St. Petersburg Institute of Fine Mechanics and Optics, Sablinskaya st. 14, 197101, St. Petersburg, Russia; www.ifmo.ru
- Principal subjects Optics and radiophysics
- Title of qualification awarded **Candidate of Science (PhD equivalent)**
- Title of thesis Analytical modeling of electromagnetic crystals

- Dates (from – to)
- Name of organization

September 1998 – May 2000

St. Petersburg Institute of Fine Mechanics and Optics,
Sablinskaya st. 14, 197101, St. Petersburg, Russia; www.ifmo.ru

- Principal subjects
- Title of qualification awarded
- Title of thesis

Applied mathematics and computer science

Master of Science, cum laude

Electromagnetic interaction in regular arrays of scatterers

- Dates (from – to)
- Name of organization

September 1994 – May 1998

St. Petersburg Institute of Fine Mechanics and Optics,
Sablinskaya st. 14, 197101, St. Petersburg, Russia; www.ifmo.ru

- Principal subjects
- Title of qualification awarded
- Title of thesis

Applied mathematics and computer science

Bachelor of Science, cum laude

Exact solution of interaction and excitation problems in regular arrays of bianisotropic scatterers

SCHOLARSHIPS FOR SUPPORT OF STUDIES

- Hudswell International Research Scholarship (IEE, UK, 2003)
- Nokia Scholarship (Nokia comp., Finland, 2003)
- SUMMA Fellowship in Advanced Electromagnetics (USA, 2002)
- IEEE MTTs Fellowship (USA, 2001)
- INTAS Fellowship (Belgium, 2001)
- SPIE Educational Scholarships (USA, 1999, 2000, 2003)
- Grants of International Soros Science Education Program (1995-2000, 2003)
- Grant for PhD students and young scientists of SPIFMO (Russia, 2003)
- Grant of St. Petersburg Administration for young scientists (Russia, 1998/99)
- Scholarship of Russian Federation Ministry of Education (Russia, 1999)
- Personal Scholarship of the President of Russian Federation for the progress in study and scientific research (Russia, 1998)
- Scholarship of St. Petersburg Mayor (Russia, 1997/98)

WORK EXPERIENCE

- Dates (from – to)
- Name and address of employer

April 2021 – **present time** / April 2017 – March 2021

School of Physics and Engineering /

Department of Physics and Engineering <http://physics.ifmo.ru>

ITMO University 49 Kronverksky pr. 197101, St. Petersburg, Russia; www.ifmo.ru

- Occupation or position held

Head of School of Physics and Engineering /

Dean of Faculty of Physics and Engineering

Research in the areas of metamaterials, metasurfaces, plasmonic nanostructures, nanoantennae, homogenization, spatial dispersion, magnetic resonance imaging.

- Dates (from – to)
- Name and address of employer

April 2015 - August 2018 / November 2010 – March 2015

Department of Nanophotonics and Metamaterials,
The International Research Centre of Nanophotonics and Metamaterials (The Metamaterials Laboratory); <http://metalab.ifmo.ru>

ITMO University, 49 Kronverksky pr. 197101, St. Petersburg, Russia; www.ifmo.ru

- Occupation or position held

Head of Department / Principal Researcher, Head of Centre

- Main activities and responsibilities

Research in the areas of metamaterials, metasurfaces, plasmonic nanostructures, nanoantennae, homogenization, spatial dispersion, magnetic resonance imaging.

- Dates (from – to) Sept. 2007– Nov. 2010 / Feb. 2004 – Nov. 2004 / May 2003 – Jan. 2004
- Name and address of employer St. Petersburg State University of Information Technologies, Mechanics and Optics; Photonics and Optoinformatics Department, Sablinskaya st. 14, 197101, St. Petersburg, Russia; www.ifmo.ru
- Occupation or position held **Leading Researcher / Associate Professor / Senior Researcher**
- Main activities and responsibilities Theoretical and numerical studies of electromagnetic crystals and metamaterials. Undergraduate teaching (electromagnetics, mechanics).

- Dates (from – to) September 2007 – August 2012
- Name and address of employer School of Electronic Engineering and Computer Science, **Queen Mary University of London**, Mile End Road, London E1 4NS, UK. www.elec.qmul.ac.uk
- Occupation or position held **EPSRC Advanced Research Fellow**
- Main activities and responsibilities Theoretical and experimental studies of subwavelength imaging by means of metamaterials within the framework of EPSRC Advanced Research Fellowship.

- Dates (from – to) June 2005 – August 2007
- Name and address of employer Department of Electronic Engineering, **Queen Mary University of London**, Mile End Road, London E1 4NS, UK. www.elec.qmul.ac.uk
- Occupation or position held **Post-doctoral Research Assistant**
- Main activities and responsibilities Theoretical and experimental studies of metamaterials: electromagnetic crystals, left-handed media and nanostructures within the framework of EPSRC project.

- Dates (from – to) Nov. 2008 – March 2009
- Name and address of employer **Robert Bosch GmbH**, Russian R&D Center, Shvetsova st. 41/15, 198095, St. Petersburg, Russia; <http://www.bosch.ru>
- Occupation or position held **Research Engineer (Consultancy)**
- Main activities and responsibilities Research in the areas of thermoelectric materials and photovoltaic cells, analysis of alternative energy sources

- Dates (from – to) December 2004 – May 2005
- Name and address of employer Mobile Communication Division, Telecommunication Network Business, **Samsung Electronics Co., Ltd.**, #94-1, Imsoo-Dong, Gumi-City, Gyeong-Buk, 730-350, Korea; www.samsung.com
- Occupation or position held **Research Engineer**
- Main activities and responsibilities Design and numerical simulation of antennas for mobile terminals (ultra-compact, multi-band, wideband) using artificial materials.

- Dates (from – to) January 2001 – May 2003
- Name and address of employer Radio Laboratory, **Helsinki University of Technology**, PO. Box 3000, FIN-02015 TKK, Espoo, Finland ; www.hut.fi
- Occupation or position held **Researcher**
- Main activities and responsibilities Theoretical and experimental studies of electromagnetic crystals, metamaterials and high-impedance surfaces. Participation in industrial projects (NOKIA research projects, www.nokia.fi). Design and improvement of antennas for mobile terminals and base stations. User head shielding.

- Dates (from – to) February 1996 – December 2000
- Name and address of employer **St. Petersburg Institute of Fine Mechanics and Optics**,

- employer
- Occupation or position held
 - Main activities and responsibilities

Sablinskaya st. 14, 197101, St. Petersburg, Russia; www.ifmo.ru

Research assistant, General Physics Department

Analytical modeling of photonic crystals and bianisotropic materials (non-reflective shields, stealth technology). Participation in research projects (Russian Foundation for Basic Research, www.rfbr.ru).

RESEARCH INTERESTS AND BACKGROUND

Metamaterials, plasmonic nanostructures, photonic and electromagnetic crystals, impedance surfaces, with emphasis on analytical, numerical (FDTD, FEM, MOM) and experimental studies of electromagnetic properties. Previously he studied: bianisotropic materials for non-reflective shields at microwave frequencies (stealth-technology), polarization transformers and frequency selective surfaces.

AWARDS

- Award of the Government of St. Petersburg for outstanding achievements in the field of higher education and secondary vocational education (2018)
- Award of the Government of St. Petersburg for scientific and pedagogical activity (2017)
- Premium of President of Russian Federation in science and innovation (2009)
- IET Achievement Award (IET, UK, 2006)
- International Dennis Gabor Award (Novofer foundation, Hungary, 2003)
- URSI Young Scientist Award (Belgium, 2002)

RESEARCH GRANTS

- The Ministry of Education and Science of Russia (Federal Target Program), 23 400 000 Rub (Russia, 2021-2023)
- Russian Found. for Basic Research, 15 000 000 Rub (Russia, 2019-2022)
- Grant of The Ministry of Education and Science of Russia (Federal Target Program), 30 000 000 Rub (Russia, 2017-2019)
- The Ministry of Education and Science of Russia, 30 000 000 Rub (Russia, 2017-2019)
- The Ministry of Education and Science of Russia (Horizon2020), 30 000 000 Rub (Russia, 2017-2019)
- The Ministry of Education and Science of Russia (BRICS), 21 000 000 Rub (Russia, 2017-2019)
- Russian Science Foundation, 25 500 000 Rub (Russia, 2015-2017)
- Grant of President of Russian Federation for governmental support of young scientists, Doctors of Sciences, 2 000 000 Rub (Russia, 2015-2016)
- Grant of Russian Foundation for Basic Research, 3 000 000 Rub (Russia, 2014-2016)
- Program for Enhancing the Competitiveness ("5-100" Project), 300 000 000 Rub (Russia, 2013-2020)
- Action 1.2.1 grant of Federal Targeted Programme "Scientific and Scientific-Pedagogical Personnel of the Innovative Russia in 2009-2013", Ministry of Education and Science of Russian Federation, 3 500 000 Rub (2009-2011)
- Action 2.1.1 grant of Analytical Ministerial Targeted Programme "Development of scientific potential of high school in 2009-2011", Ministry of Education and Science of Russian Federation, 7 024 556 Rub (2009-2011)
- Grant of President of Russian Federation for governmental support of young scientists, Candidates of Sciences, 1 200 000 Rub (Russia, 2009-2010) and 300 000 Rub (Russia, 2005-2006)
- EPSRC Advanced Research Fellowship, 483 771£ (UK, 2007-2012)

TRAVEL GRANTS

- Presidential Lecturer (OIST, Japan, 2019)
- Invited Sackler Lecturer (TAU, Israel, 2018)
- Erasmus Europhotonics Visiting Professor (Fresnel Institute, France, 2015)
- Two SPIE Visiting Lecturer Grants (USA, both 2009)
- OSA Distinguished Visiting Lecturer Award (USA, 2008)
- Raj Mittra Travel Grant (USA, 2008)
- Researcher Exchange Grant, British Council, 3 890 £ (UK, 2007)
- International Travel Grant, Royal Academy of Engineering (UK, 2005)
- Travel Grant of Russian Foundation of Basic Research (Russia, 2004)
- Travel Grant of Federal Program «Integration» (Russia, 2000, 2003)
- SPIE Travel Grant (USA, 2002)

MEMBERSHIP IN PROFESSIONAL SOCIETIES

A member of IEEE (Institute of Electrical and Electronics Engineers, www.ieee.org) AP-S (Antennas and Propagation Society, www.ieeeaps.org), MTT-S (Microwave Theory and Techniques Society, www.mtt.org), LEO-S (Laser and Electro-Optics Society, www.i-leos.org); URSI (International Union of Radio Science, www.ursi.org), SPIE (International Society for Optical Engineering, www.spie.org), OSA (Optical Society of America, www.osa.org), ISMRM (International Society for Magnetic Resonance in Medicine, www.ismrm.org).

ORGANIZATION OF CONFERENCES

- General Chair of Annual International Conference “Metanano”, Russia <http://metanano.ifmo.ru/> (since 2016, every year)
- Organizer of the Workshop on Metamaterials of Annual International Conference “Days on Diffraction”, St. Petersburg, Russia <http://math.nw.ru/DD/> (since 2006, every year)
- Local chair of 6th International Congress on Advanced Electromagnetic Materials in Microwaves and Optics (Metamaterials 2012), St. Petersburg, Russia, 17-22 September 2012, <http://congress2012.metamorphose-vi.org/>

REVIEWING FOR JOURNALS

- Science, Physical Review Letters, Physical Review A, B and E
- Optics Express, Optics Letters, Journal of Optics A: Pure and Applied Optics
- Journal of Optical Society of America A and B, Journal of Nanophotonics,
- New Journal of Physics, Applied Physics Letters, Metamaterials,
- Photonics and Nanostructures - Fundamentals and Applications
- IEEE Trans. Antennas & Propagation, IEEE Antennas & Wireless Prop. Lett.
- IET Proc. Microwaves, Antennas & Propagation

SCIENTIFIC OUTPUT

Author of more than 260 papers in scientific journals, 18 book chapters, and more than 300 reports at international conferences.

PHD STUDENT SUPERVISION

- Alexander Krasnok (2013)
- Alexey Orlov (2015)
- Alexander Chebykin (2016)
- Maxim Gorlach (2017)
- Konstantin Ladutenko (2017)
- Alexey Slobozhanyuk (double program with Australian National University, 2017)
- Sergei Kosulnikov (double program with Aalto University, 2017)
- Mikhail Omelyanovich (double program with Aalto University, 2018)
- Pavel Voroshilov (double program with Aalto University, 2018)
- Eugene Koreshin (expected 2023)
- Rustam Balafendiev (expected 2024)

Papers in referred journals:

2021

1. M. Song, P. Jayathurathnage, E. Zanganeh, M. Krasikova, P. Smirnov, P. Belov, P. Kapitanova, C. Simovski, S. Tretyakov, A. Krasnok "Wireless power transfer based on novel physical concepts. Mingzhao", *Nature Electronics*, vol. 4, pp. 707-716, 2021
2. D. Sakhno, E. Koreshin, P. Belov "Longitudinal electromagnetic waves with extremely short wavelength", *Physical Review B*, vol. 104, 2021
3. A. Slobozhanyuk, A. Shchelokova, A. V. Kozachenko, I. Melchakova, A. J.E. Raaijmakers, C. A.T. van den Berg, P. Belov, A. G. Webb "Visualization of Metasurface Eigenmodes with Magnetic Resonance Imaging", *Physical Review Applied*, vol. 16, 2021
4. V. Vorobyev, A. Shchelokova, A. Efimtcev, J. D. Baena, R. Abdeddaim, P. Belov, I. Melchakova, S. Glybovski "Improving homogeneity in abdominal imaging at 3 T with light, flexible, and compact metasurface", *Magnetic Resonance in Medicine*, 2021
5. D. Hmelevskaya, D. Markina, V. V. Fedorov, G. A. Ermolaev, A. V. Arsenin, V. S. Volkov, A. S. Goltaev, Yu. M. Zadiranov, I. Tzibizov, A. Pushkarev, A. Samusev, A. Shcherbakov, P. Belov, I. Mukhin, S. Makarov "Directly grown crystalline gallium phosphide on sapphire for nonlinear all-dielectric nanophotonics", *Applied Physics Letters*, vol. 118, pp. 201101, 2021
6. S. A. Kuznetsov, V. Lenets, M. Tumashov, A. Sayanskiy, P. A. Lazorskiy, P. Belov, J. D. Baena, S. Glybovski "Self-complementary metasurfaces for designing terahertz deflecting circular-polarization beam splitters", *Applied Physics Letters*, vol. 118, pp. 131601, 2021
7. P. Tonkaev, S. Anoshkin, A. Pushkarev, R. Malureanu, M. Masharin, P. Belov, A. Lavrinenko, S. Makarov "Acceleration of radiative recombination in quasi-2D perovskite films on hyperbolic metamaterials", *Applied Physics Letters*, vol. 118, pp. 091104, 2021

2020

8. P.V. Kapitanova, E. Zanganeh, N. Pavlov, M. Song, P.A. Belov, A.B. Evlyukhin, A.E. Miroshnichenko "Seeing the Unseen: Experimental Observation of Magnetic Anapole State Inside a High-Index Dielectric Particle", *Annalen der Physik*, Vol.532, pp. 2000293, 2020
9. N.D. Pavlov, I. Stenishchev, A. Ospanova, P.A. Belov, P.V. Kapitanova, A. Basharin "Toroidal Dipole Mode Observation In Situ", *Physica status solidi (b)*, Vol. 257, No. 3, pp. 1900406, 2020
10. M. Song, A. Krasnok, R. Yafyasov, P.A. Belov, P.V. Kapitanova "Obstruction tolerant metasurface-based wireless power transfer system for multiple receivers", *Photonics and Nanostructures - Fundamentals and Applications*, Vol. 41, pp. 100835, 2020
11. M. Song, P. Smirnov, E.M. Puhtina, E. Zanganeh, S.B. Glybovski, P.A. Belov, P.V. Kapitanova "Multi-mode metamaterial-inspired resonator for near-field wireless power transfer", *Applied Physics Letters*, Vol. 117, No. 8, pp. 083501, 2020
12. A.A. Hurshkainen, B. Steensma, S.B. Glybovski, I.J. Voogt, I.V. Melchakova, P.A. Belov, Van Den Berg C., Raaijmakers A. "A parametric study of radiative dipole body array coil for 7 Tesla MRI", *Photonics and Nanostructures - Fundamentals and Applications*, Vol. 39, pp. 100764, 2020
13. A.D. Sinelnik, I.I. Shishkin, X. Yu, K.B. Samusev, P.A. Belov, M.F. Limonov, P.B. Ginzburg, M.V. Rybin "Experimental observation of intrinsic light localization in photonic icosahedral quasicrystals", *Advanced Optical Materials*, pp. in press, 2020
14. A. Markvart, M. Song, S.B. Glybovski, P.A. Belov, C.R. Simovski, P.V. Kapitanova "Metasurface for Near-Field Wireless Power Transfer with Reduced Electric Field Leakage", *IEEE Access*, Vol. 8, pp. 40224-40231, 2020
15. K. Lezhennikova, R. Abdeddaim, A.A. Hurshkainen, A. Vignaud, M. Dubois, P. Jomin, D. Berrahou, A. Raaijmakers, N. Avdievich, I.V. Melchakova, S. Enoch, P.A. Belov, C.R. Simovski, S.B. Glybovski "Constructive near-field interference effect in a birdcage MRI coil with an artificial magnetic shield", *Physical Review Applied*, Vol. 13, No. 6, pp. 064004, 2020
16. A.V. Shchelokova, V.A. Ivanov, A.A. Mikhailovskaia, E.I. Kretoev, I. Sushkov, S. Serebryakova, E. Nenasheva, I.V. Melchakova, P.A. Belov, A.P. Slobozhanyuk, A. Andreychenko "Ceramic resonators for targeted clinical magnetic resonance imaging of the breast", *Nature Communications*, Vol. 11, No. 1, pp. 3840, 2020
17. M.A. Moussu, S.B. Glybovski, R. Abdeddaim, C. Craeye, S. Enoch, D. Tihon, S.A. Kurdjumov, M.

- Dubois, E. Georget, A.G. Webb, P.A. Belov, L. Ciobanu "Imaging of two samples with a single transmit/receive channel using coupled ceramic resonators for MR microscopy at 17.2 T", *NMR in Biomedicine*, pp. in press, 2020
18. M.A. Moussu, R. Abdeddaim, M. Dubois, E. Georget, A.G. Webb, E. Nenasheva, P.A. Belov, S. Glybovski, L. Ciobanu, S. Enoch "A Semi-Analytical Model of High-Permittivity Dielectric Ring Resonators for Magnetic Resonance Imaging", *IEEE Transactions on Antennas and Propagation*, Vol. 68, No. 8, pp. 6317-6329, 2020
 19. M. Su, Y. Sun, B. Chen, Z. Zhang, X. Yang, S. Chen, Q. Pan, D.A. Zuev, P.A. Belov, Y. Song "A fluid-guided printing strategy for patterning high refractive index photonic microarrays", *Science Bulletin*, pp. in press, 2020
 20. J. Tian, Q. Li, P.A. Belov, R.K. Sinha, W. Qian, M. Qiu "High-Q All-Dielectric Metasurface: Super and Suppressed Optical Absorption", *ACS Photonics*, Vol. 7, No. 6, pp. 1436-1443, 2020
- 2019
21. A.P. Slobozhanyuk, A.V. Shchelokova, X. Ni, S. Hossein Mousavi, D.A. Smirnova, P.A. Belov, A. Alu, Y.S. Kivshar, A.B. Khanikaev "Near-field imaging of spin-locked edge states in all-dielectric topological metasurfaces", *Applied Physics Letters*, Vol. 114, No. 3, pp. 031103, 2019
 22. M.A. Odit, A.D. Sayanskiy, V.S. Asadchy, P.V. Kapitanova, S.A. Tretyakov, P.A. Belov "All-dielectric metamirror for independent and asymmetric wave-front control", *Physical Review B*, Vol. 100, No. 20, pp. 205136, 2019
 23. P. Buslaev, I.V. Iorsh, I.V. Shadrivov, P.A. Belov, Y.S. Kivshar "Reply to Comment on "Plasmons in Waveguide Structures Formed by Two Graphene Layers"(*JETP Letters* 97, 535 (2013))//*JETP Letters*, Vol. 109, No. 11, pp. 770, 2019
 24. M.A. Zubkov, A.E. Andreychenko, E.I. Kretov, G.A. Solomakha, I.V. Melchakova, V.A. Fokin, C.R. Simovski, Belov P.A., Slobozhanyuk A.P. "Ultrahigh field magnetic resonance imaging: new frontiers and possibilities in human imaging", *Physics-USpekhi*, Vol. 62, No. 12, pp. 100-120, 2019
 25. M. Song, K. Baryshnikova, A. Markvart, P. Belov, E. Nenasheva, C. Simovski, P. Kapitanova "Smart Table Based on a Metasurface for Wireless Power Transfer", *Physical Review Applied*, Vol. 11, No. 5, pp. 054046, 2019
 26. H.K. Shamkhi, K.V. Baryshnikova, A. Sayanskiy, P. Kapitanova, P.D. Terekhov, P.A. Belov, A. Karabchevsky, A.B. Evlyukhin, Y. Kivshar, A.S. Shalin "Transverse Scattering and Generalized Kerker Effects in All-Dielectric Mie-Resonant Metaoptics", *Physical review letters*, Vol. 122, No. 19, pp. 193905, 2019
 27. M. Moussu, L. Ciobanu, S. Kurdjumov, E. Nenasheva, B. Djemai, M. Dubois, A. Webb, S. Enoch, P.A. Belov, R. Abdeddaim, S.B. Glybovski "Systematic Analysis of the Improvements in Magnetic Resonance Microscopy with Ferroelectric Composite Ceramics", *Advanced materials*, Vol. 31, No. 30, pp. 1900912, 2019
 28. N.D. Pavlov, I. Stenishchev, A. Ospanova, P.A. Belov, P.V. Kapitanova, A. Basharin Toroidal Dipole Mode Observation In Situ", *Physica status solidi (b)*, No. in press, pp. 1900406, 2019
- 2018
29. S.Y. Kosulnikov, V.V. Zalipaev, A.V. Shchelokova, I.V. Melchakova, S.B. Glybovski, A.P. Slobozhanyuk, P.A. Belov "Mode hopping in arrays of resonant thin wires over a dielectric interface", *Physical Review B*, Vol. 98, No. 17, pp. 174302, 2018
 30. S.I. Lepeshov, A.E. Krasnok, P.A. Belov, A.E. Miroshnichenko "Hybrid nanophotonics", *Physics-USpekhi*, Vol. 61, No. 11, pp. 1035-1050, 2018
 31. V.A. Milichko, D.A. Zuev, D.G. Baranov, G.P. Zograf, K.V. Volodina, A.A. Krasilin, I.S. Mukhin, P.A. Dmitriev, V.V. Vinogradov, S.V. Makarov, P.A. Belov "Metal-dielectric nanocavity for real-time tracing molecular events with temperature feedback", *Laser and Photonics Reviews*, Vol. 12, No. 1, pp. 1700227, 2018
 32. M.A. Gorlach, X. Ni, D.A. Smirnova, D.V. Korobkin, D. Zhirihin, A.P. Slobozhanyuk, P.A. Belov, A. Alu, A.B. Khanikaev "Far-field probing of leaky topological states in all-dielectric metasurfaces", *Nature Communications*, Vol. 9, pp. 909, 2018
 33. A.V. Shchelokova, A.P. Slobozhanyuk, P. De Bruin, I. Zivkovic, E. Kallos, P.A. Belov, A. Webb "Experimental investigation of a metasurface resonator for in vivo imaging at 1.5 T", *Journal of Magnetic Resonance*, Vol. 286, pp. 78-81, 2018
 34. A.V. Shchelokova, A.P. Slobozhanyuk, I.V. Melchakova, S. Glybovski, A.G. Webb, Y.S. Kivshar, P.A. Belov "Locally enhanced image quality with tunable hybrid metasurfaces", *Physical Review Applied*, Vol.

- 9, No. 1, pp. 014020, 2018
35. S.V. Makarov, I.S. Sinev, V.A. Milichko, F.E. Komissarenko, D.A. Zuev, E. Ushakova, I.S. Mukhin, Yu Y.F., A.I. Kuznetsov, P.A. Belov, I.V. Iorsh, A.N. Poddubny, A.K. Samusev, Y.S. Kivshar “Nanoscale Generation of White Light for Ultrabroadband Nanospectroscopy”, *Nano Letters*, Vol. 18, No. 1, pp. 535-539, 2018
 36. M.A. Gorlach, D.A. Dobrykh, A.P. Slobzhanyuk, P.A. Belov, M.V. Lapine “Nonlinear symmetry breaking in photometamaterials”, *Physical Review B*, Vol. 97, No. 11, pp. 115119, 2018
 37. A.V. Shchelokova, C. van den Berg, D.A. Dobrykh, S.B. Glybovski, M.A. Zubkov, E.A. Brui, D. Dmitriev, A.V. Kozachenko, A.Y. Efimtcev, A. Sokolov, V.A. Fokin, I.V. Melchakova, P.A. Belov “Volumetric Wireless Coil Based on Periodically Coupled Split-Loop Resonators for Clinical Wrist Imaging”, *Magnetic Resonance in Medicine*, Vol. 80, No. 4, pp. 1726-1737, 2018
 38. A.A. Hurshkainen, A. Nikulin, E. Georget, B. Larrat, D. Berrahou, L. Neves, P. Sabouroux, S. Enoch, I.V. Melchakova, P.A. Belov, S.B. Glybovski, R. Abdeddaim “A Novel Metamaterial-Inspired RF-coil for Preclinical Dual-Nuclei MRI”, *Scientific Reports*, Vol. 8, pp. 9190, 2018
 39. S.I. Lepeshov, A.A. Gorodetskii, A.E. Krasnok, N.A. Toropov, T.A. Vartanyan, P.A. Belov, A. Alu, E.U. Rafailov “Boosting Terahertz Photoconductive Antenna Performance with Optimised Plasmonic Nanostructures”, *Scientific Reports*, Vol. 8, pp. 6624, 2018
 40. I.S. Sinev, F.E. Komissarenko, I.S. Mukhin, M.I. Petrov, I.V. Iorsh, P.A. Belov, A.K. Samusev “Near-field optical microscopy of surface plasmon polaritons excited by silicon nanoantenna”, *Nanosystems: Physics, Chemistry, Mathematics*, Vol. 9, No. 5, pp. 609-613, 2018
 41. E.A. Brui, A.V. Shchelokova, A.V. Sokolov, A.P. Slobzhanyuk, A.E. Andreychenko, V.A. Fokin, P.A. Belov, I.V. Melchakova “Magnetic Resonance Spectroscopy at 1.5 T with a Hybrid Metasurface”, *JETP Letters*, Vol. 108, No. 6, pp. 423-427, 2018
- 2017
42. A. A. Hurshkainen, B. Steensma, S. B. Glybovski, I. J. Voogt, I. V. Melchakova, P. A. Belov, C.A.T. van den Berg, A.J.E. Raaijmakers, “On Optimization of Radiative Dipole Body Array Coils for 7 Tesla MRI”, *ArXiv*, 2017
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